CLAIMS

What is claimed is:

1. A negative electrode for a rechargeable lithium battery comprising:

a first polymer layer;

a second polymer layer on the first polymer layer;

a metal layer on the second polymer layer; and

a negative active material layer on the metal layer.

2. The negative electrode of claim 1, wherein the second polymer layer is formed by a coating process of one of: knife coating, direct roll coating, reverse roll coating, gravure roll coating, gap coating, spray coating, and slot die coating.

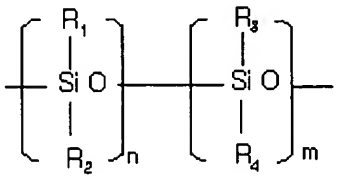
3. The negative electrode of claim 1, wherein the second polymer layer has a thickness of 0.01 to 10 μm.

4. The negative electrode of claim 2, wherein the second polymer layer has a thickness of 0.02 to 7.5 μm.

5. The negative electrode of claim 3, wherein the second polymer layer has a thickness of 0.03 to 5 μm.

6. The negative electrode of claim 1, wherein the second polymer layer comprises a material selected from the group consisting of a silicon-included compound, polyalkylene oxide, polyolefin, polydiene, polyfluorocarbon, a mixture thereof, and a copolymer thereof.

7. The negative electrode of claim 5, wherein the silicon-included compound is represented by formula 1:



(1)

where R_1, R_2, R_3, and R_4 are identically or independently selected from C_1-C_{18} linear alkyls, or a branched alkyl, cyclic alkyl, alkenyl, aryl, aralkyl, halogenated alkyl, halogenated aryl, halogenated aralkyl, phenyl, mercaptan, methacrylate, acrylate, epoxy, or vinyl ether; and

n and m are the same or different integers of 1 to 100,000.

8. The negative electrode of claim 1, wherein the first polymer layer is selected from the group consisting of polypropylene, polyethylene, polyethylene terephthalate, polyamide, polyimide, polyolefin, polyester, polyacetal, polycarbonate, polysulfone, polyvinylchloride, ethylene vinyl alcohol, and ethylene vinyl acetate.

9. The negative electrode of claim 1, wherein the first polymer layer has a thickness of 1 to 200 μm.

10. The negative electrode of claim 8, wherein the first polymer layer has a thickness of 2 to 100 μm.

11. The negative electrode of claim 9, wherein the first polymer layer has a thickness of 3 to 50 μm.

12. The negative electrode of claim 1, wherein the metal layer has a thickness of 1 to 10,000 μm.

13. The negative electrode of claim 11, wherein the metal layer has a thickness of 5 to 5000 μm.

14. The negative electrode of claim 12, wherein the metal layer has a thickness of 10 to 1000 μm.

15. The negative electrode of claim 1, wherein the metal layer comprises a metal selected from the group consisting of Ni, Ti, Cu, Ag, Au, Pt, Fe, Co, Cr, W, and Mo.

16. The negative electrode of claim 1, wherein the metal layer comprises a metal being capable of forming an alloy with lithium.

17. The negative electrode of claim 15, wherein the metal is selected from the group consisting of Al, Mg, K, Na, Ca, Sr, Ba, Si, Ge, Sb, Pb, In, and Zn.

18. The negative electrode of claim 1, wherein the negative active material layer has a thickness of 1 to 100 μm.

19. The negative electrode of claim 17, wherein the negative active material layer has a thickness of 2 to 80 μm.

20. The negative electrode of claim 18, wherein the negative active material layer has a thickness of 3 to 50 μm.

21. The negative electrode of claim 1, wherein the negative electrode is used in a lithium-sulfur battery.

22. The negative electrode of claim 1, wherein the negative electrode further comprises another second polymer layer, metal layer and negative active material layer sequentially formed on the side of the first polymer layer that is opposite to the second polymer layer.